

SECTION 1

Introduction

This CAP was prepared for the former AST-2 located on the POL Hill Outparcel at HAAF, Novato, California (Figure 1-1). This CAP was prepared for the U.S. Army through the USACE, Sacramento District and accomplishes the following:

- Presents the results of an RI conducted for AST-2 within the POL Hill Outparcel from 1996 to 1997
- Evaluates the findings of the recent RI, along with results of previous soil and groundwater characterization activities at the POL Hill AST-2 Area
- Develops corrective actions capable of obtaining site closure for the POL Hill AST-2 Area
- Evaluates these corrective actions to identify the preferred remedy

The POL Hill Outparcel is located within the HAAF Base Realignment and Closure (BRAC) property (Figure 1-2) in Novato, California. Features of the POL Hill Outparcel include the location of the former AST-2 on the north end of Reservoir Hill and a former below ground tank farm on the lowlands adjacent to Reservoir Hill (Figure 1-3). This CAP addresses only the former POL Hill AST-2 Area. The former tank farm area is addressed separately in the Closure Report – POL Hill Outparcel – Tank Farm (CH2M HILL).

For purposes of this CAP evaluation, the POL Hill AST-2 Area was divided into two media of interest, soil and groundwater, in the vicinity of the former AST-2. Petroleum hydrocarbons are present in the soil and groundwater, and are associated with site use and storage of the fuel JP-4. Through individual analyses of both media, a preferred corrective action is selected that collectively addresses the physical and environmental impacts to both the soil and groundwater at the site.

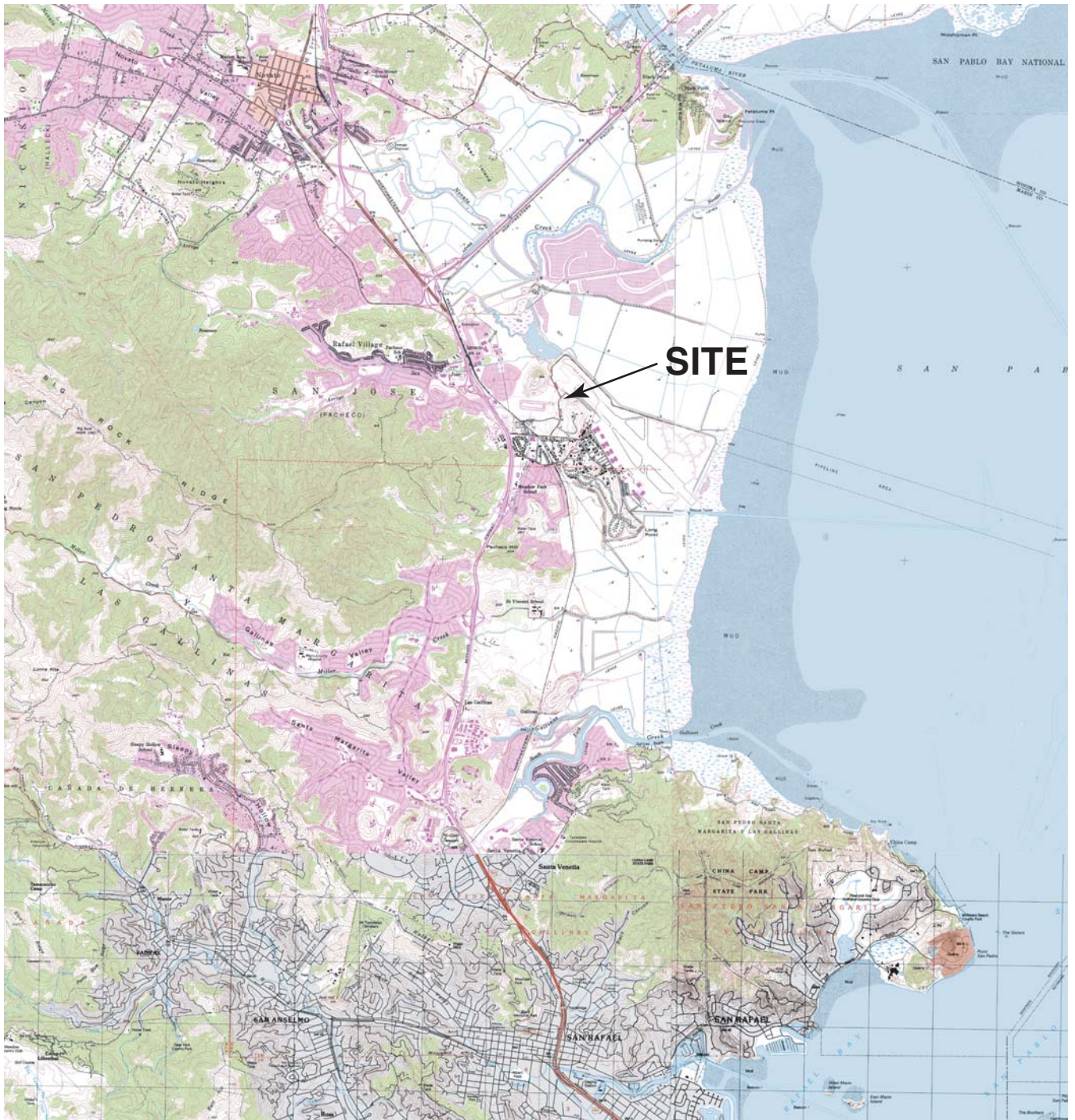
1.1 Site History and Problem Statement

The POL Hill Outparcel is separated from the Main BRAC Property by approximately 200 feet (ft) and is surrounded by the GSA Phase II Sale Area (Figure 1-2). The POL Hill Outparcel contained two main features:

- The site of a former large aboveground storage tank and associated piping (AST-2)
- The site of a former underground tank farm

As previously mentioned, this CAP only addresses the POL Hill AST-2 Area.

A former 850,000-gal AST (AST-2) was located at POL Hill. AST-2 previously stood on a graded bench on the north side of Reservoir Hill and supplied the lower tank farm by gravity feed through a pipeline system. AST-2 stored JP-4 for aircraft operations and was removed in 1986.



0 1 2
SCALE IN MILES

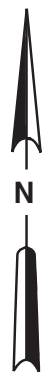
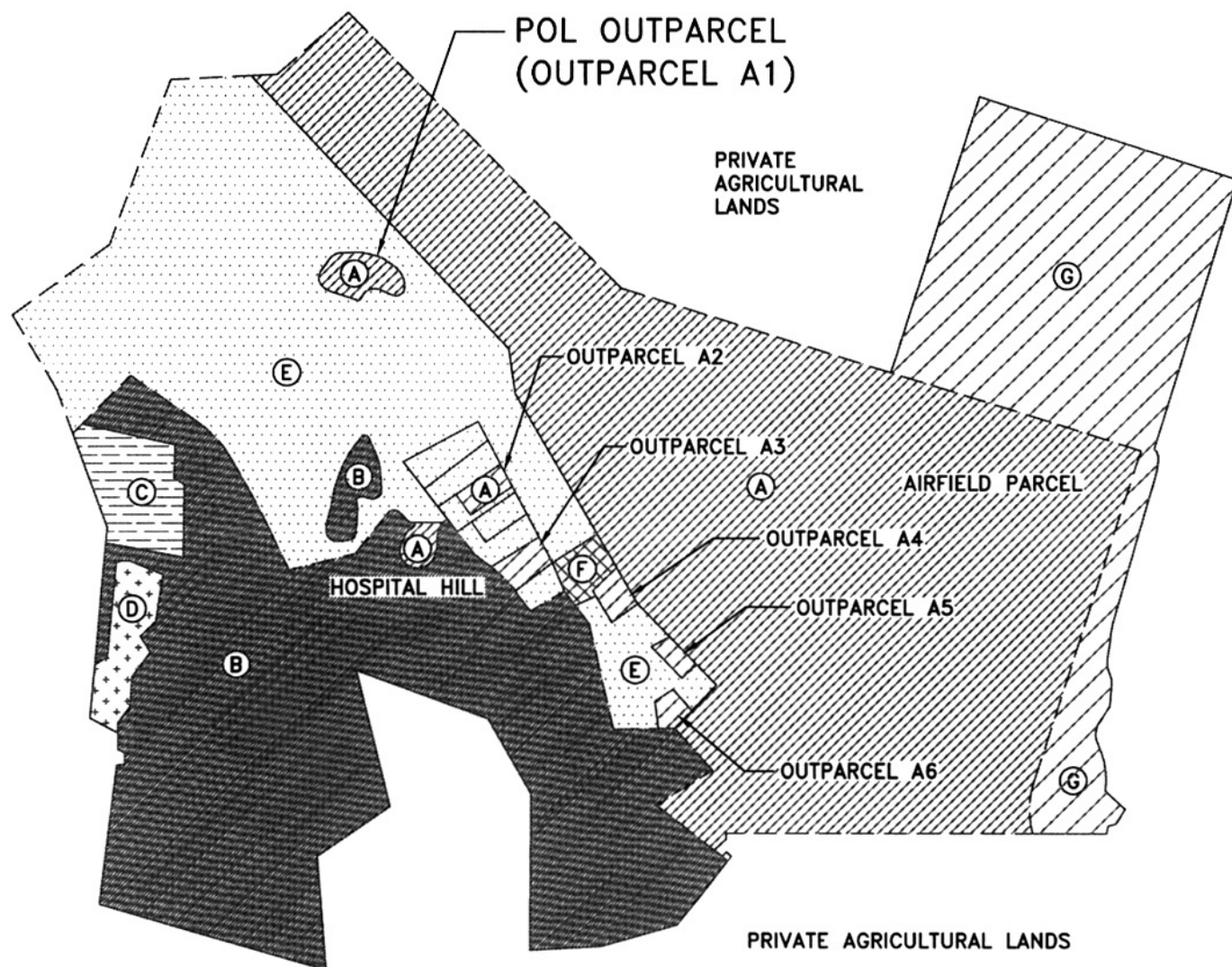


Figure 1-1
Site Location Map
POL Hill
Hamilton Army Airfield
Novato, California

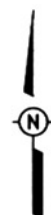
Source: USGS Novato, Petaluma Point, San Rafael,
and San Quentin Quadrangles - July 1983

CH2MHILL

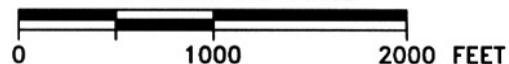


LEGEND:

- ARMY-OWNED PROPERTY BOUNDARY
- (A) BRAC PROPERTY
- (B) NAVY HOUSING
- (C) LANHAM HOUSING
- (D) NOVATO SCHOOL DISTRICT
- (E) GSA SALE PARCEL
- (F) US COAST GUARD
- (G) STATE OF CALIFORNIA



APPROXIMATE SCALE



BRAC PROPERTY LOCATION MAP
POL HILL
HAMILTON ARMY AIRFIELD
NOVATO, CALIFORNIA



CH2MHILL

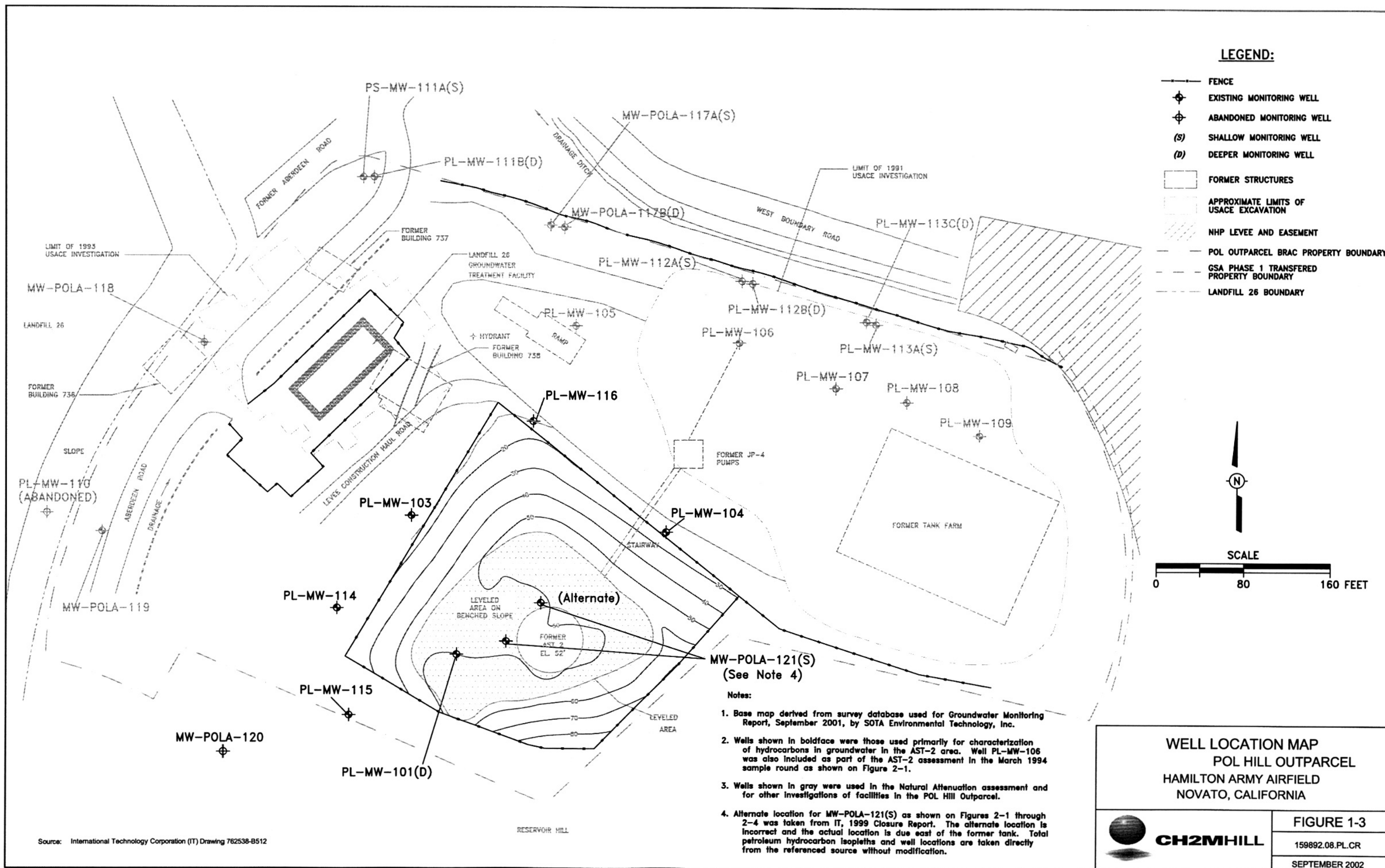
FIGURE 1-2

159892.08.PL.CR

April 2003

SOURCES:

Woodward-Clyde Federal Services Drawing SK9469
International Technology Corporation Drawing 762538-A315



Over the years, unknown amounts of JP-4 fuel were released from AST-2 and piping appurtenances and contaminated the surrounding soils and underlying groundwater. During removal of AST-2, known and suspected impacted soils were excavated if TPH concentrations exceeded 1,000 mg/kg. Following excavation and removal activities, soil sampling was conducted along the periphery of the excavation to confirm contaminant removal (IT, 1987). Subsequent excavation activities were conducted to remove, to the extent possible (i.e., down to bedrock), impacted soils where TPH concentrations exceeded 100 mg/kg (IT, 1991). The excavation area was backfilled with clean material. Groundwater samples were collected beneath the former AST-2 Area in March 1994, February 1997, March/April 1998, June/July 1998, August/September 1998, January 1999, September 2001, February 2002, and August 2002 to characterize the environmental impacts. These data support the conclusion that the hydrocarbon-contaminated groundwater in the bedrock fissures is stable and shrinking. Other groundwater monitoring results indicate that natural attenuation has been occurring at the site (IT, 1999; SOTA, 2002).

During the tank and soil excavation activities, a rock outcrop, which surrounds the southern area immediately behind the former AST-2 location, had an area of visible staining. A composite sample of the rock outcrop was collected and analyzed to assess the staining. The rock staining is not considered to be environmentally significant and there are no associated assumed human health or ecological risks (IT, 1999).

1.2 Purpose and Objective

The purpose of this CAP is to plan and document corrective actions for groundwater contamination at the POL Hill AST-2 Area. The objectives of the CAP process are: to provide documentation of releases of petroleum or hazardous substances at the site; to delineate the general extent of any known contamination; to identify potential corrective actions; to provide rationale for the selection of a recommended corrective action; and to propose a rationale for determining when the POL Hill AST-2 Area is ready for closure. This effort is based on process knowledge and investigative activities conducted by the U.S. Army.

To accomplish the purpose and objectives, the scope of work associated with this effort and documented in this CAP includes:

- Review and discussion of the current condition of the POL Hill AST-2 Area
- Identification of chemicals of concern
- Development of corrective action objectives
- Identification of appropriate corrective action technologies
- Development of corrective action alternatives
- Recommendation and justification of a preferred corrective action alternative.

The results of these tasks are presented in this document as discussed in Section 1.4.

1.3 Regulatory Authority, Guidance, and Current Regulatory Status

The U.S. Army is the lead agency involved in the BRAC Closure process at HAAF. The RWQCB is the lead regulatory agency for the POL Hill Outparcel. The RWQCB's status as the lead regulatory agency is formally documented in a letter from the Department of Toxic Substances Control (DTSC) to the Army which indicates that petroleum hydrocarbons are not regulated as hazardous substances in the California Health and Safety Code (DSTC, July 3, 1998).

In addition, the U.S. Environmental Protection Agency (EPA) is an oversight agency for closure of sites within the POL Hill Outparcel.

The work described in this report was performed pursuant to the Comprehensive Remedial Investigation/Feasibility Study Work Plan (IT, 1997a) and the Contractor Quality Control/Sampling and Analysis Plan (CQC/SAP) (IT, 1997b), which was approved by the regulatory agencies. Additionally, the remedial investigation activities were conducted in accordance with the statutory requirements defined in the California Code of Regulations Title 23, Division 3, Chapter 16, Article 11 (Underground Storage Tanks) (1994). The recent groundwater monitoring activities (i.e., after January 1999) were completed in accordance with the approved workplan dated October 31, 2001 (SOTA, 2001).

Other guidance documents used in preparation of this closure report include the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Storage Tank Sites* (TRWQCB, 1990), the *Supplemental Instructions to State Water Board, December 8, 1995*, *Interim Guidance on Required Cleanup at Low Risk Fuel Sites* (RWQCB, 1996), the risk-based corrective action approach documented in the American Society of Testing and Materials (ASTM) *Standard Guide for Risk Based Corrective Action Applied at Petroleum Release Sites* (1995), and ASTM *Standard Guidance for Remediation of Groundwater by Natural Attenuation at Petroleum Release Sites* (1998).

These regulatory requirements not only drive the generation of this CAP but are also considered in the identification of corrective action objectives and in the evaluation and analysis of corrective action alternatives (both of which are discussed in subsequent sections of the text).

The results of previous environmental investigations and evaluation of remedial alternatives for the POL Hill AST-2 Area were presented in a meeting on May 2, 2001 between RWQCB regulators and USACE personnel. It was decided at that meeting that monitored natural attenuation (MNA) is a potentially appropriate remedial alternative for contaminated groundwater at the POL Hill AST-2 Area pending the acquisition of additional data. It was agreed to collect an additional three rounds of groundwater samples to confirm the viability of MNA as the chosen remedial alternative. Following the three rounds of sampling to support the MNA alternative, talks with the RWQCB would be held to discuss the results of the MNA analytical testing and the implications for long-term monitoring and ultimate closure of the site.

This CAP documents the data that were collected prior to the May 2, 2001 meeting and the subsequent three rounds of groundwater sampling and analysis by SOTA (2002). It also identifies a decision rationale for evaluating the ongoing groundwater monitoring data to determine when the site is ready for closure. The results of the MNA analytical testing prior

to May 2, 2001 are provided in Appendix H. Results from additional MNA analytical testing are included in the report by SOTA (2002) included in Appendix I.

1.4 Report Organization

This CAP has been divided into the following sections:

- **Section 1 – Introduction**
Summarizes the objectives/scope, site history, and regulatory authority for development of this CAP
- **Section 2 – Description of Current Conditions**
Provides a brief summary of the results of the previous and recent investigative activities conducted at the POL Hill AST-2 area
- **Section 3 – Corrective Action Objective Development**
Documents the steps taken in identifying corrective action technologies and developing corrective action alternatives
- **Section 4 – Identification of Corrective Action Technologies**
Presents corrective action technologies applicable to site-specific conditions and the media and contaminants present at the site
- **Section 5 – Development of Corrective Action Alternatives**
Presents corrective action alternatives developed from the applicable technologies which will achieve the stated corrective action objectives
- **Section 6 – Recommended Corrective Action Alternative**
Presents the preferred corrective action alternative and the rationale for its selection
- **Section 7 – Proposed Interim Monitoring and Site Closure Plan**
Presents a plan for interim monitoring and determining when the site can be closed
- **Section 8 – References**
Presents a list of all referenced documents and figures
- **Appendix A – Recent Remedial Investigation Results**
Presents the results of the 1996-1997 remedial investigation activities at the POL Hill AST-2 Area; these activities included: installing and sampling additional groundwater monitoring wells, conducting specific capacity and slug testing to evaluate stability of the contaminants in the groundwater within bedrock fractures, and assessing the presence or absence of soil and groundwater contamination near the groundwater treatment facility
- **Appendix B – Boring Logs and Well Construction Diagrams**
Presents boring logs for the recently drilled soil borings and groundwater-monitoring wells; also presents construction details and diagrams of the groundwater-monitoring wells
- **Appendix C – Well Development and Well Survey Data**

Presents well development data for the groundwater monitoring wells associated with AST-2, as well as location survey data for those wells

- **Appendix D – Field Documentation**

Presents sample collection logs and analytical request/chain of custody forms for the soil and groundwater samples

- **Appendix E – Validated Analytical Data**

Presents validated analytical data for the analyzed soil and groundwater samples

- **Appendix F – Aquifer Test Data**

Presents the results of the slug and pump tests conducted on the recently installed groundwater-monitoring wells

- **Appendix G – Cost Estimates**

Presents detailed and present-worth calculations for each of the corrective action alternatives

- **Appendix H – Monitored Natural Attenuation Summary**

Provides background information on MNA and summarizes site-specific information

- **Appendix I – Groundwater Monitoring Report**

Text, tables, and figures from Draft report by SOTA Environmental Technology, Inc. dated August 2002.